SPECIFICATION

The paragraph bridging pages 1 and 2:

Historically, motion pictures have been recorded as a series of still positive transparent images or frames on a transparent media (e.g., film). The images were then projected as a sequence of frames at a relatively fast rate (normally at 24 frames per second) on a passive screen. These still images are perceived by the human eye as moving pictures. Three separate physiological phenomenon contribute to this effect: persistence of vision, phenomenal movement (also known as the Phi effect) and ~~the~~ a specific stroboscopic phenomenon ~~effect~~ which is referred to herein as the 'blink effect'. The first phenomenon refers to the eye's ability to retain an image for a period of time after it impinges on the retina. The second phenomenon pertains to the eye's propensity to interpret similar images projected in quick sequence on the retina as corresponding to a moving object. The third phenomenon is very important in dealing with images of moving objects. This phenomenon is based on the eye's perception of similar images interrupted by a black interval. The eye (or more properly, the visual cortex of the brain) interprets the black interval as an eye blink and two similar images separated by the black period are interpreted as representing a moving object. Advantageously, as a film is shown via a standard movie projector, its frames are separated by a black interval generated by a shutter while a current frame is replaced by a succeeding frame. The duration of this black interval is commensurate with the ~~stroboscopic~~ blink effect.

Last full paragraph, page 2:

During the last several years, digital projectors have been developed which can be used to project moving images from digital signals. As many content providers are adapting digital technology as a means of creating motion pictures, digital projectors are gaining acceptance as the primary means for generating motion pictures. However, independently of what technology they use, digital projectors do not utilize shutters. Therefore, the images that make up a typical motion picture are not separated by black intervals and the ~~stroboscopic~~ blink effect is not present. As a result, when a motion picture is shown through a digital projector, its images appear jerky or smeared. Surprisingly, this effect can occur at both very high and very low rates, as explained in more detail below.

Page 3, first full paragraph:

In view of the above-disadvantages of the prior art, it is an objective of the present invention to provide a digital projector that has an improved motion rendition by inducing a ~~stroboscopic~~ blink effect in the viewer's eyes.

Page 3, third full paragraph:

Other objectives and advantages of the invention shall become apparent from the following description of the invention. Briefly, the subject application pertains to a digital projector having an input receiving digital data defining image frames; and an optical modulator adapted to generate a sequence of images of a moving object corresponding to the digital data. Advantageously, the images are generated in such a manner that they are separated by black intervals selected to induce a ~~stroboscopic~~

blink in the eye of a viewer. The duration and occurrence of these black intervals are defined by blink signals. By using these blink signals the projector, broadly speaking, mimics or imitates the operation of the shutter on a standard movie projector. In this manner the quality and smoothness of the images being projected is visibly improved. Preferably the black intervals are synchronized so that at least one black interval occurs during each frame. The black intervals have a duration in the range of 1-20 msec.

Page 3, last paragraph:

In another aspect of the invention, a digital projector adapted to generate moving images from a stream of data consisting of digital frames is disclosed having an input adapted to receive the stream of data and a timer adapted to generate blink signals in synchronism with the digital frames. An optical image generator is used to generate a sequence of optical images corresponding to the sequence of digital frames, the optical images being separated by or interspaced by black intervals defined by the blink signals, the black intervals being spaced to induce a ~~stroboscopic~~ blink effect in the eyes of the viewers.

Page 4, second full paragraph:

In another aspect of the invention a method of generating moving images from data is disclosed by generating blink signals selected to induce a ~~stroboscopic~~ blink effect in the eyes of a viewer; converting the data into images; and projecting said images and the blink signals in sequence with images being interspaced by blink signals. Preferably no light is projected during said black intervals.

Page 6, first full paragraph:

As discussed above, this blink effect is obtained by a standard movie projector by taking advantage of the three different phenomena discussed above. The appearance of motion of the image is enhanced and smoothed by the black intervals. For example, as illustrated in Fig. 2, a standard projector projects 24 frames per second. Typically, during each frame period, a shutter within the projector opens and closes twice. When the shutter is opened, light passes through the film and is focused on the screen to reproduce the image from the film on the screen. When the shutter is closed, light is blocked, resulting in black intervals 10 being interposed between the images 10A. Thus, in Fig. 2, two image intervals 1 are generated during the first frame, two image intervals 2 are generated during the second frame and so on. Each black interval 10 and each image 10A are 1/96 sec long, so that the projector can be said to be symmetric and to have a 50% duty cycle.

Page 7, last paragraph:

The present inventors have discovered that the problems described above can be substantially reduced or eliminated if in each projected frame, a black interval is introduced within each frame. This interval induces a ~~stroboscopic~~ blink effect in the viewers' eyes in the same manner as the black intervals caused by the shutter in a standard movie projector, and results in images that appear to be moving more smoothly and evenly then without the ~~stroboscopic~~ blink effect.

Page 10, first full paragraph:

The black intervals need not have a 50% duty cycle. Black intervals of much shorter duration can be utilized to achieve the same ~~stroboscopic~~ blink effect. For example, the black interval may be 1/6th of the frame duration. More specifically, for 24 frames/sec, the duration of each modified frame is 41.66 msec. A black interval with an interval BI of 6.9 msec could be used with the remaining 34.7 msec being reserved for projecting the respective image.

Page 10 second full paragraph:

This process or method of inducing a ~~stroboscopic~~ blink effect in a viewer is referred to as asymmetrical stroboscopy. In accordance with the Talbot-Plateau law, the light efficiency of the projector 50 is changed from 50% in case of a 50% duty cycle to 83.33% . This arrangement results in a 66% improvement in light output. In general, the blink interval must be at least 50% of the total frame duration.